

ABSENCE OF THE LEFT UPPER LIMB AND PECTORAL GIRDLE IN A UNIQUE ANGLO-SAXON BURIAL

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THE INHUMATION (S.C.H.)

IN the cemetery at Worthy Park, Kingsworthy, Hampshire, there are 94 burials. Grave No. 38, which lay north-south, contained the skeleton of a man aged approximately 28 to 30 years. He was one of the few persons at this site buried without grave objects. He must have been from the lowest class in the community. Probably he was a slave. The date of interment thus is difficult to establish but was probably late sixth or early seventh century.

The subject lay supine and extended, his head on its right side and his right hand clasped over his neck (Figures 1 and 2). The extraordinary thing about this man is that he lacked all the bones of his left upper extremity as well as the left scapula and clavicle. In view of the fact that the rest of the skeleton is almost perfectly preserved, it seems impossible that these bones should have decayed without trace. Lest there be any suspicion of faking, it should be said that I (S.C.H.) excavated this burial personally and it would have been impossible to remove the clavicle and scapula without disturbing the ribs and the beautifully articulated finger bones of the right hand, which were placed over the cervical vertebrae. Their removal along with the bones of the upper limb might just possibly have occurred after partial decomposition of the corpse had it been preyed on in this state by marauding animals¹ but, again, the hand would surely have been disturbed. Moreover, although the grave was cut only 23 cm. deep into the chalk subsoil, it had been covered by 46 cm. of topsoil, 28

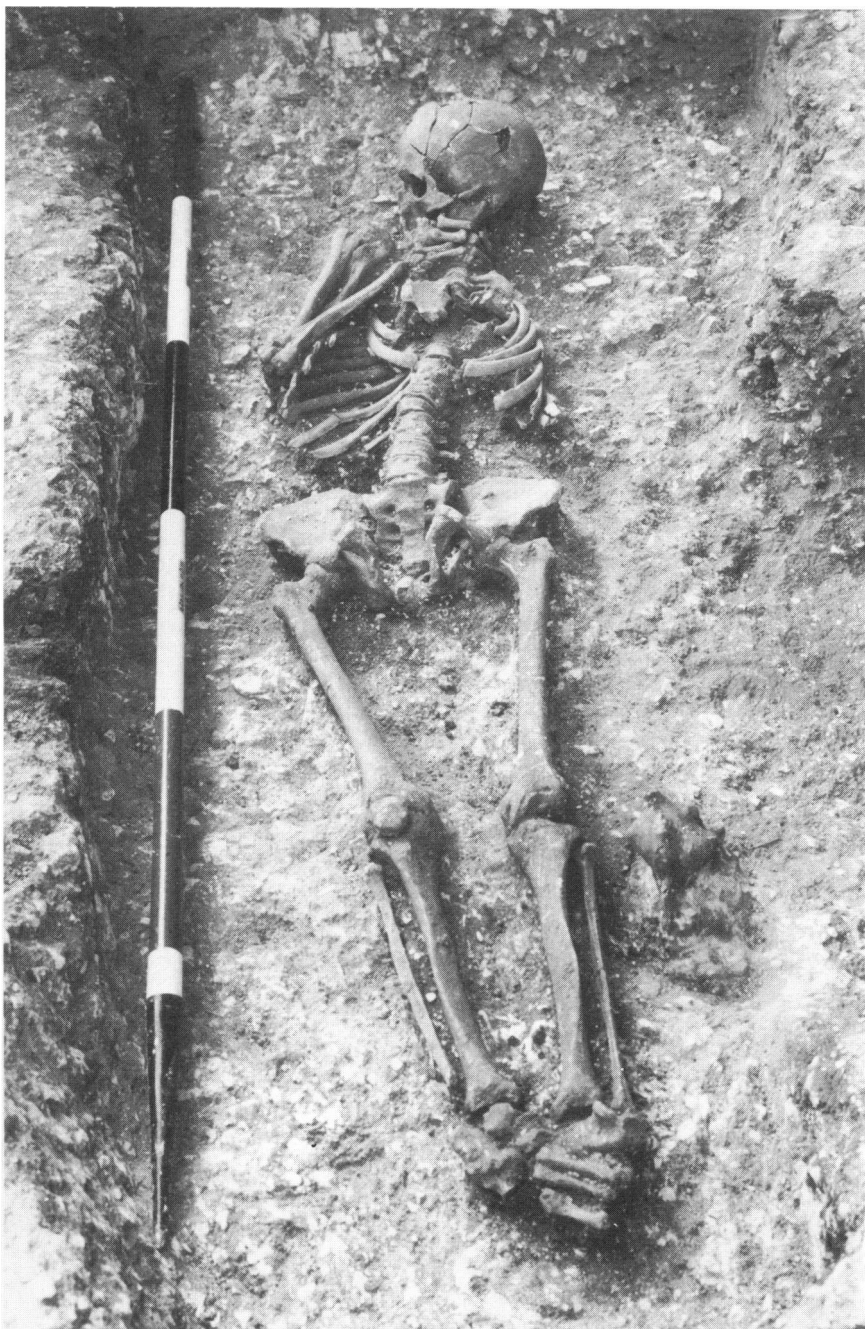


Fig. 1. Worthy Park Burial 38: the skeleton as found.

cm. composed of an original overburden containing contemporary cremation burials. There is little doubt that in Anglo-Saxon times the overburden was even thicker and the grave would have been no more vulnerable to four-footed predators than most others in the cemetery. Finally, the filling of chalky earth was tightly compacted and showed no sign of disturbance, ancient or modern.

All things considered, I was forced to conclude that the whole of the left arm, clavicle, and scapula had been missing at the time of burial, and at the time of excavation I was very puzzled indeed to find a satisfactory explanation for this. More than a dozen years have elapsed since this burial was excavated and recorded. At last it has found an interpreter.

THE SKELETON (C.W.)

The archaeological evidence here is precise and unambiguous; it reveals the undisturbed burial of a man who lacked the bones of his left upper extremity, scapula, and clavicle. The task of the palaeopathologist is to explain this remarkable finding—a finding which is unique in the annals of pathology. Fortunately, the diagnosis presents no problem but, because of the exceptional nature of the case, it deserves at least a short discussion.

We can begin by elimination. This absence of a whole forequarter is not the result of any kind of infection. No disease such as osteomyelitis or leprosy (which can occasionally lead to gangrenous loss of digits or more extensive areas) would have destroyed the entire limb, followed by neat removal of the scapula and clavicle. There is no known form of malignant tumor which could have eroded all these structures, least of all without leaving evidence in other parts of the skeleton. Whole limbs may—very rarely—be destroyed by the gangrene of ergotism. However, apart from its occurrence in a Suffolk family in 1762, Great Britain seems to have been virtually unaffected by serious episodes of this disease throughout the Middle Ages, and even when a humerus is involved total destruction of the clavicle and scapula does not occur. Trauma, which might seem a more likely explanation, also can be excluded. Hacking off a whole forequarter with an axe or sword could hardly be accomplished without leaving cuts on other bones, especially the ribs and sternum. Avulsion of the limb by a brown bear or wolves would be an event almost beyond the limits of credibility. In either case, death from hemorrhage would have followed at once. To remove the limb and clavicle, as here, would entail severing the huge left subclavian artery.

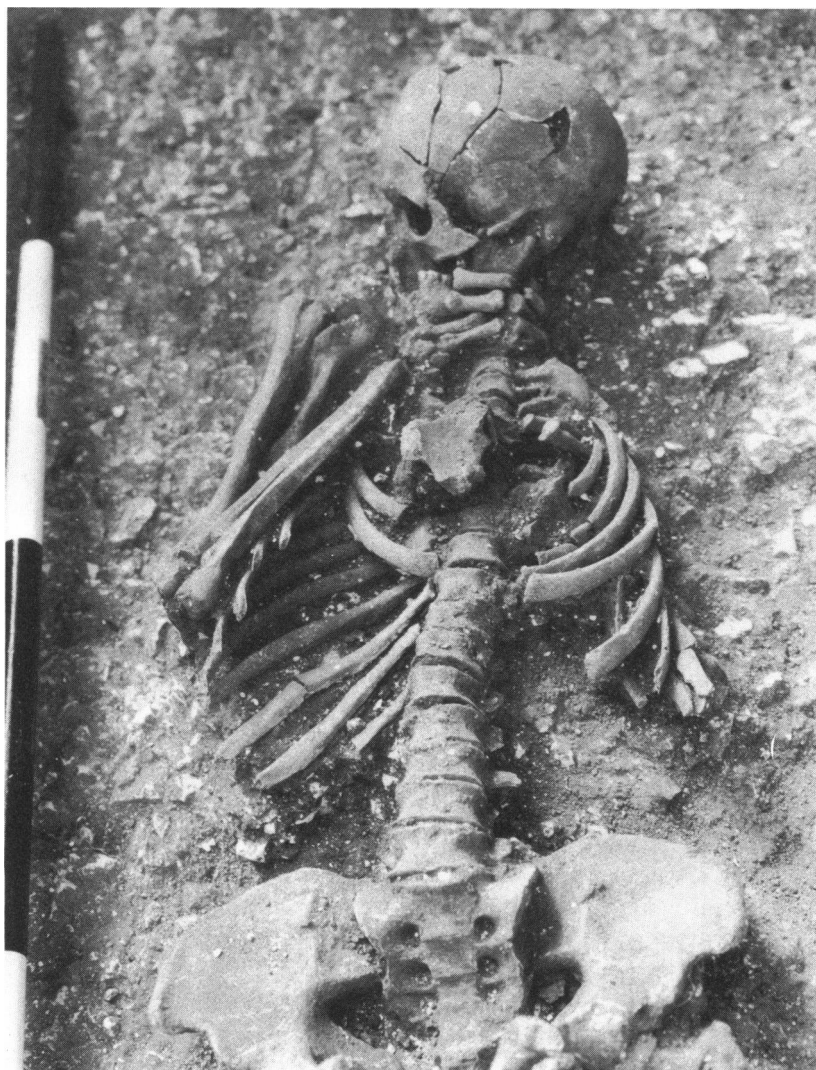


Fig. 2. Worthy Park Burial 38:detail showing the absence of the left forequarter.

It is pointless to prolong the discussion by other negative evidence. The diagnosis is, quite simply, congenital absence of the limb.

Major deformities of this kind have long been known and are far from being limited to the notorious group recently produced by thalidomide. Many variants occur. Sometimes the missing member is one hand (acheira) or one foot (apodia) only; a whole leg or both; or all four limbs (amelia), leaving nothing but a wriggling and surprisingly agile trunk and head. Sometimes all limbs may be missing but with a rudimentary—or complete—hand or foot emerging like a flipper from the shoulder or pelvis (phocomelia). There is no need to give a long list of references to these sorts of anomaly. The condition is well known and has often been described. A good description of these deformities, mostly based on cases due to thalidomide, was given by Sharrard.² An interesting prethalidomide group was described by Balard;³ at least seven members of a family were severely affected over four generations. Two of these persons apparently had amelia of the left upper limb almost identical to the case described here. From the many earlier examples we may mention those recently described and illustrated by Lamers⁴ and Puschel.⁵

In view of the excellent preservation of the skeleton and the meticulous care with which it was excavated, the diagnosis is almost self-evident and needs no further substantiation. However, supporting evidence is available and it is worth adducing lest any doubt should remain.

Major abnormalities of this type are usually associated with minor deformities as well. These may be of two kinds: 1) further small genetic or intrauterine anomalies and 2) functional adjustments to the primary defect. As expected, Worthy Park Burial 38 shows many other aberrant features; their presence conclusively proves that the anomaly was no sort of fatal catastrophe or postmortem dissection. A detailed description of these anatomical minutiae would run to many pages and be unnecessarily tedious. Briefly, the additional defects involve the vertebral bodies and articulations, the ribs, the pelvis, and perhaps a few features in the lower limbs.

The most obvious spinal defect is scoliosis or lateral curvature, which is especially marked in the midthoracic region and less evident at midcervical and midlumbar levels. It takes the form of transverse wedging of the vertebral bodies, which are deeper on the left side than on the right. The cervical scoliosis is partly compensatory, but the lumbar wedging, especially on the second segment, is in the same direction as the thoracic deformity. Rotation of vertebrae also is present and several of the spinous

processes are deflected to one side. Another obtrusive feature is that some of the intervertebral articular facets, especially in the cervical region, are much bigger on the left than the right while in the thoracic region the facets for the heads of the left ribs are considerably larger than those on the right.

These asymmetries are no doubt due mostly to functional adjustments. A congenitally one-armed man habitually works with his trunk slightly rotated in order to project his only hand. This leads to torsion and lateral bending in his spinal column. Also, he must of necessity always carry burdens in his one hand, with the permanent spinal adjustment that this entails.

An important additional factor in producing asymmetry should be noted. In the total absence of the upper limb, all the widespread and powerful muscles which normally extend to it from the trunk are absent or vestigial. These include the deltoid, the huge pectoralis major, the serratus anterior, the latissimus dorsi, the pectoralis minor, the subscapularis, and several others. When these muscles are absent the anatomy of the rib cage is much modified. The bodies of the corresponding ribs on the two sides are no longer symmetrical and the articular facets of their heads may be almost twice as large on the defective side as on the normal one. This apparently paradoxical result, which is well marked in the present burial, is probably a functional compensation. In the absence of normal support from large masses of surrounding muscles this increase in the area of their vertebral attachment gives greater stability to all the costal elements on the defective side.

There can be no shadow of doubt that this man was asymmetrical from birth. The slight lateral curve and rotation of the vertebral column almost certainly must have been transmitted downward to produce asymmetry in the pelvis so that, presumably, the sacroiliac joints and hips were subjected to unequal stresses. That this was so, indeed, is clearly shown by the remains of ossified extensions into the right anterior sacroiliac ligament but not the left. The ossified fibers involve both the right sacral ala and the margin of the auricular surface of the right ilium. The acetabula also are asymmetrical. They show early osteoarthritic lipping but, whereas on the left this is at the most inferior border of the joint, on the right it is about a third of the way up the posterior border.

Finally, a well marked exostosis is present on the right talus at the place where the talonavicular ligament is attached. This might have been due to

injury, as from twisting the foot, but it also could be the result of many years of walking with abnormal and unequal stresses on the tarsal bones.

When this well-preserved skeleton is examined in detail, it fully supports the evidence derived from excavation of the grave. There need be no hesitation in accepting that this unfortunate man was born without his left forequarter and we can only wonder whether the macabre horror of his deformity drove him in those ruder times to become literally an Anglo-Saxon one-armed bandit.

He appears, at least, to have been the victim of several attacks. Unfortunately, his skull is now missing, but Mr. Bernard Denston kindly tells us that it had a well-repaired fracture through the left half of the mandible, with evidence of healed sword cuts on the left parietal bone and also, perhaps, on the right zygoma and maxilla.

NOTES AND REFERENCES

1. This explanation was given by Professor A. J. E. Cave for the absence of the left arm, scapula, and legs of an Iron Age skeleton buried in a shallow, ill-protected grave at Bury Hill Camp, Hampshire. *Papers Proc. Hampshire Field Club Archaeol. Soc.* 14:323, 1940; 15:45, 1941.
2. Sharrard, W. J. W.: *Paediatric Orthopaedics and Fractures*. Oxford and Edinburgh, Blackwell Sci. Publ., 1971, pp. 101-28.
3. Balard, P.: Une famille de phocomèles. *Bull. Mém. Soc. Méd. Chir. Bordeaux*: 273-76, 1938.
4. Lamers, A. J. M.: Benoit Formaggini, "homme tronc." *Aesculape* 27:260-62, 1937.
5. Puschel, E.: Die Amelie in der Lebensbewahrung dargestellt an Thomas Schweicker 1540-1602. *Deutsch. Med. Wschr.* 88:1402-04, 1963.